

Walled Rock Shelters and a Cached Spear in the Pilbara Region, Western Australia

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Abstract

In late 1977, our attention was drawn to walled rock shelters in the Pilbara Region of Western Australia where a spear was discovered behind an intact wall section. Although the age of the spear is not firmly established, we suggest that it is of post-contact origin. This paper considers walled rock shelters and their relationship to various other Aboriginal stone structures reported throughout Australia. We also describe the spear, and compare it to other pieces in the ethnographic collection of the Western Australian Museum. Finally, we suggest a possible use for walled rock shelters.

Background

In November 1977, Goldsworthy Mining Ltd personnel advised the Department of Aboriginal Sites, Western Australian Museum, that a spear and other pieces of wood had been discovered behind a man-made wall in a rock shelter on their mining lease. Subsequent investigation of the site led to the recovery of the spear and prompted search for further examples of stone walling.

Physical Setting

The vast accumulation of iron rich rocks is perhaps the best known feature of the Pilbara Region (Figure 1). At several locations these rocks are currently mined for export (Trendall 1974). One temporary mining reserve (Goldsworthy's Area 'C', also known as Packsaddle) straddles a low range (c. 800 m elevation above sea level) where, following uplift, erosion of cracks and joint planes has resulted in the formation of fissures, sink holes, tunnels, and small caverns. In section these latter features are usually plano-convex or flattened ovals, with the long axis aligned horizontally. Most of the gullies and steeper sided gorges contain several of these features.

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Tropical cyclones dominate the Pilbara climate with an average of two per year being recorded. They occur between December and March and result in about half the annual rainfall (average *c.* 250 mm). Summer thunderstorms and infrequent winter rains make up the remainder. Marble Bar, 225 km north of the study area and the closest settlement with adequate records, averages just less than five falls of rain greater than 20 mm per year. With daily high annual mean temperatures of 35.7°C, the humidity is correspondingly very low (Beard 1975). This semi-arid climate played a considerable part in the preservation of the spear discussed in this paper.

Within the research area, the vegetation can be characterized as tree steppe, dominated by the *Eucalyptus brevifolia*-*Triodia wiseana* association (Beard 1980). The lower slopes and the gullies contain riverine woodland flora, including *Eucalyptus camaldulensis*, *Acacia* spp., *Grevillea* spp., *Hakea* spp., etc., while valley plain habitats carry mulga formations (*Acacia aneura* low woodland).

Previous Research

A number of studies have focused upon the rock art of the Pilbara (Dix 1977; McCarthy 1962; McCaskill 1977; Virili 1977; Worms 1954; Wright 1968, 1977) and Palmer (1975, 1977*a*, *b*, *c*) has related aspects of rock art to ethnographic site data. In light of the discussion to follow, it is worth noting that spears are depicted in the rock art of the region (e.g. Wright 1968: 43, 62).

Studies into other aspects of the prehistory of the Pilbara Region include reports of archaeological sites in the Chichester Ranges (Dortch 1972), the Tom Price area (Bednarik 1977), and the Millstream area (summarized and reported in Clarke *et al.* 1978). These studies lack occupation dates and none mention the wooden artefacts of the region. Brown (1980) has analyzed stone artefact assemblages along a transect from coast to inland through the area, but once again without the benefit of dating. In addition, numerous unpublished surveys (Department of Aboriginal Sites, Western Australian Museum) further document the extent of prehistoric Aboriginal occupation in specific localities throughout the area. Maynard (1980) published the first radiometric date of 20,740 ± 345 BP (SUA 1041) for an inland site in the Pilbara (P0187, a rock shelter near Newman — Figure 1).

Tindale's (1974) map of tribal boundaries in Aboriginal Australia indicates that the site is within the territory of the Pandjima people. Population figures for this tribe are not available, but numbers around 500 are probably realistic given the semi-arid nature of this area (Radcliffe-Brown 1930: 688). Early ethnographic accounts (e.g. Withnell 1901) make no mention of walled rock shelters or spears of the type mentioned in this paper. Clement and Schmelz (1903) published ethnographical notes which include the first report of a spear of the type we describe in detail.

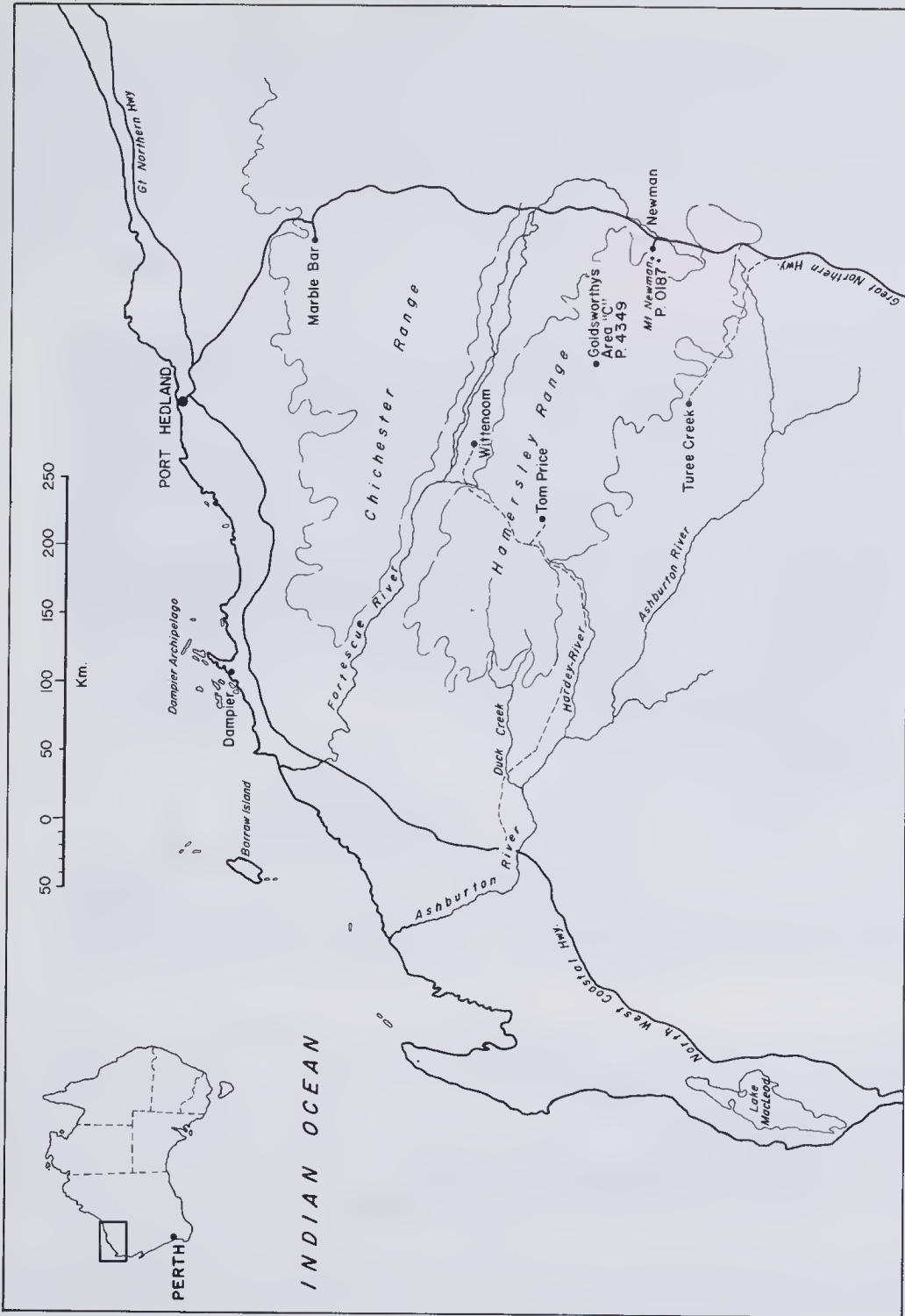


Figure 1 The Pilbara Region, Western Australia.

The Site

Located 105 km south-east of Wittenoom and 85 km north-west of Mt Newman, the rock shelter (P4349 — Figure 1) lies in a low ridge trending roughly east/west ($22^{\circ}59'S$, $118^{\circ}49'E$). On this ridge, and on the adjacent plain, there are a number of other Aboriginal sites including artefact scatters, stone arrangements, and several other rock shelters, some containing dry-stone walling. The shelter described in this report faces south into a shallow but steep-sided gully (Figure 2). Other fissures, cracks and small shelters in the same strata also open into this gully. Except for stone walls and pieces of wood, none of them contain cultural material and none is large enough to provide shelter for humans.

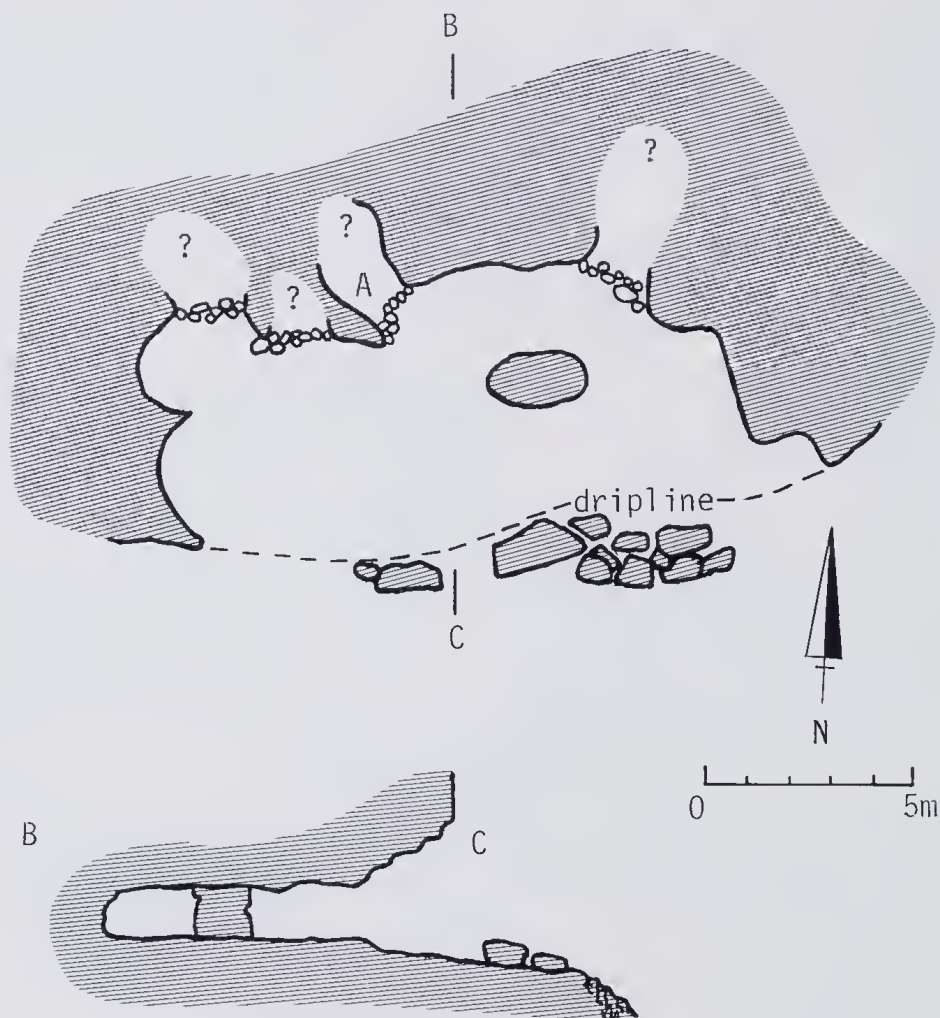


Figure 2 Sketch of floor plan and cross-section of walled rock shelter (P4349) in which the spear (A) was found.

Inside the rock shelter, all the passages at the rear and sides have been walled (Figure 3). These walls consist of flattish slabs (to 30 cm³) of local rock, laid one slab wide, one on top of another, with random jointing patterns. Except where now broken down, the walls fill the whole space between floor and ceiling, and extend across the passages. It appears that these walls were not intended to completely seal the area enclosed behind them. In three cases, a naturally hollowed section of tree-trunk about 50 cm long and 10 cm internal diameter has been placed horizontally by the builder so as to penetrate the wall. The otherwise complete walls have one or two slabs omitted leaving an opening about 10 or 15 cm in diameter.



Figure 3 Stone walling techniques inside the rock shelter.

Behind the wall the floor is 40 cm higher than in the open part of the shelter. This enclosed floor is covered with fist-sized rocks fallen from the walls and ceiling of the shelter. It is littered with twigs and spinifex (*Triodia* sp.) leaf blades. The spear described later in this paper was lying on this surface when discovered. Some of this debris has entered the shelter through a small sink hole now choked with rubble. The walled section is too small to enter, and can only be examined from a prone position.

In a review of Aboriginal stone structures, Mountford (1940) proposed two major categories: cairn-like structures and piles of pebbles (pebble mounds). Withnell (1901: 5) mentions piles of stone with ceremonial functions. Neither of

these two authors discuss walling. Kimber (1981) discusses a number of stone features including walling, but not within caves. However, stone-wall fish-traps are well known in Western Australia (e.g. Love 1936: 138), and Worsnop (1897: 108) describes walls across small gullies in the Kimberley. Stone circles, made by clearing a rocky area of stones which are then used to make a wall, have been found in the Pilbara, in other areas of Western Australia and in other places in Australia (e.g. McCaskill 1977: 184). Love (1936: 176) mentions small enclosures of stone in which dingo pups were confined. These walls, and other clearings found on rocky hillsides may have been used as hunting hides. They are in the open, not within rock shelters.

Commonly in the Kimberley and more rarely elsewhere, secondary burial chambers were constructed by wedging a few stone slabs across a suitable small crevice. Sacred material was sometimes stored in walled niches and these places marked in one way or another to warn the uninitiated not to endanger themselves by approaching too closely. The complete lack of human bone fragments or appropriate cultural material together with the absence of any of the usual markers, rules out the use of the walled shelters described here as either burial chambers or repositories.

The Spear

The spear (Figure 4) found in the walled niche, is now registered in the W.A. Museum collection as A23064. It is of composite form, 2.73 m in total length, with a single barb carved from the solid on the point section. This point (32 cm in length) appears to be made from *Acacia* sp., while the shaft (2.41 m in length) is a less dense wood of unknown genus. The spear point is affixed to the shaft with gum and sinew, and the shaft has been treated with fat and ochre at some time in the past. A crack in the main shaft has been repaired in the Museum, but no attempt has been made to straighten the curvature which has occurred due to warping. The spear weighs c. 300 g, and its point of balance is located 0.44 of its total length from the tip of the spear head.

Scorch marks appear on the shaft, suggesting the usual practice of heating the wood during initial construction for the purpose of straightening the shaft and to assist bark removal (e.g. Hayden 1979: 75). There is also a small scorch mark at the barb suggesting that the barb's angle of deviation from the main body of the spear head (c. 25°) may have been adjusted by heating. The length of the barb is 42 mm and the vertical distance from the point of the barb to the adjacent spear shaft is 15 mm.

Recently the head of a spear of this type, detached from its shaft, was found in a Pilbara rock shelter and donated to this Museum (WAM A23494, Figure 5). Although the tip and barb area is mostly lost, enough remains to indicate that again the barb was carved from the solid near a knot as in the case of the recently discovered specimen. This spear head has a series of about 30 oblique cuts running

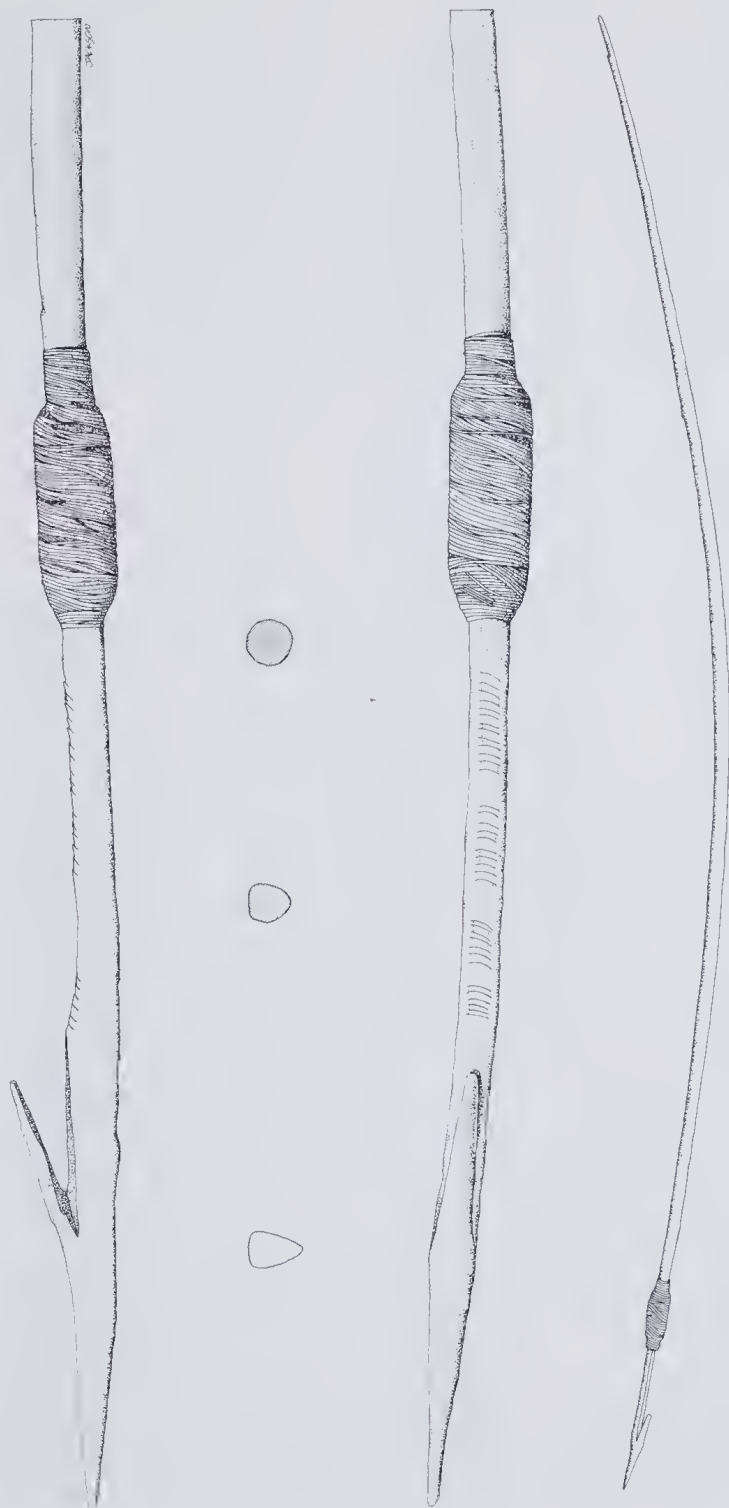


Figure 4 A23064 — the spear discovered in the rock shelter. Length = 2.73 m.

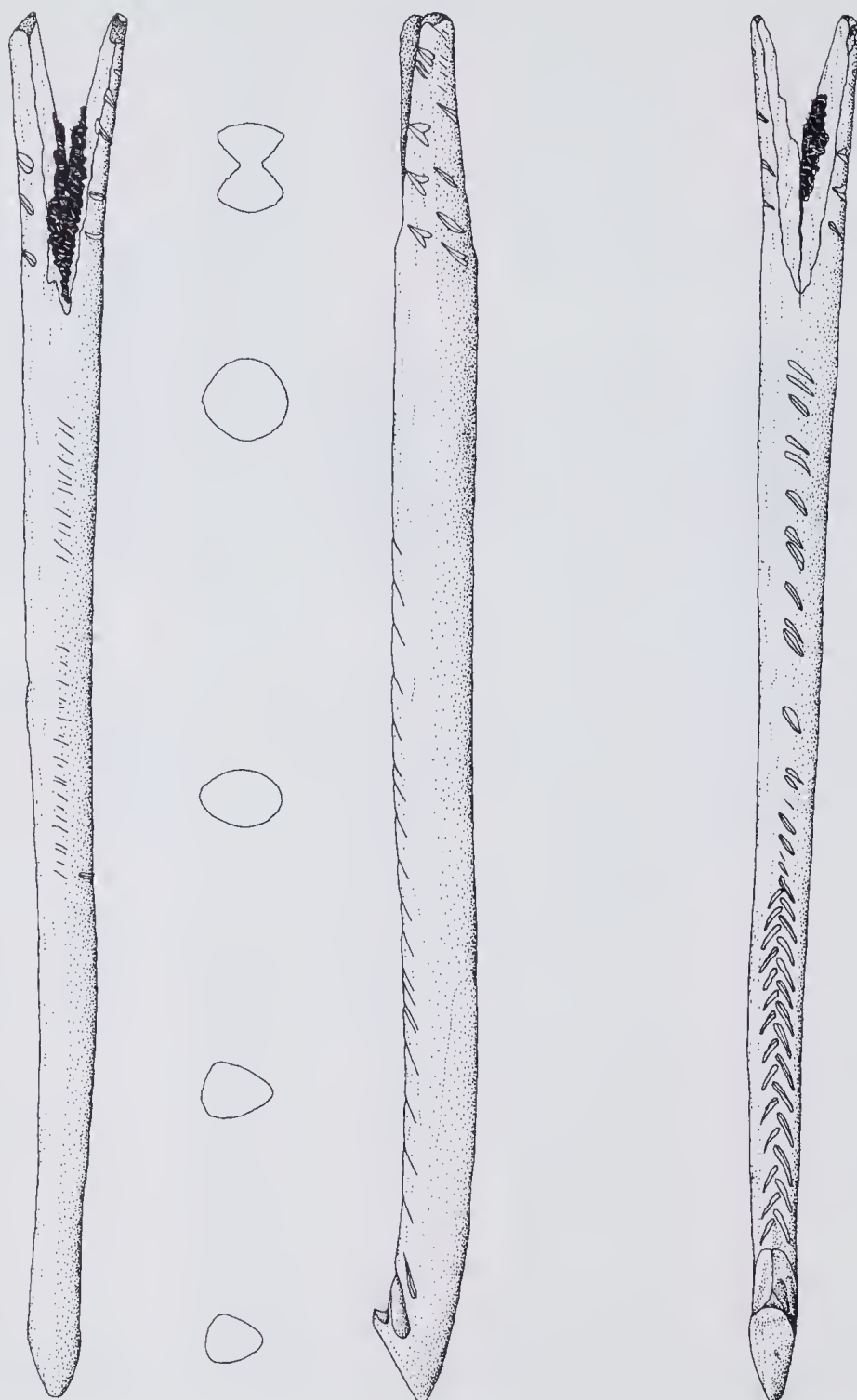


Figure 5 A23494 — head of a similar spear. Length = 24.8 cm.

along the barb side for 16 cm. Near the barb another group of 14 similarly shaped cuts join the longer series to produce a group of 'V' shapes. Both series of cuts have been produced with a thin metal blade. On the other side of this artefact is a further series of about 35 somewhat indistinct cuts three millimetres long and less than one millimetre wide. The ends and edges of these have been partly smoothed during the manufacturing process or perhaps at a later stage. Similar cuts appear on the shaft of another spear of this type in the WAM collection (A343, Figure 6) but not on other points which we have examined. We conclude that at least some of these cuts were produced during thickness reduction or paring when very short shavings were being taken from the shaft in places where long shavings might split off a wooden splinter of greater thickness than was required. We have observed this practice in contemporary Western Desert communities.

A very neat binding of tail sinew from *Macropus* sp. extends for 72 mm over the resin-cemented joint between the head and shaft of the spear found in the cave. A similar spear head (WAM A23455, Figure 7) which has been sawn from its shaft is less carefully spliced and exhibits part of the deep 'V' shaped notches used to interlock the head and shaft of such spears (Clement and Schmelz 1903: 5). This example has a rag strip binding the cemented join, but all other similar spears in the Western Australian Museum collection have sinew bound splices.

The splicing method can be clearly seen on a point removed from the shaft (Figure 5). The 'V' form of the grooves used to produce a strong joint between head and shaft is quite evident. A small patch of spinifex resin can still be seen deep in the cleft. This resin has been used to cement the point to the shaft in the first step of hafting. About ten oblique cuts on each of the horns of the splice were provided apparently to offer a more secure attachment for the resin cement. This method is at variance with that described by Clement and Schmelz (1903: 5) in which the splice is first bound together with sinew and then covered with resin.

On A2304, the spear found behind the wall, there are 35 shallow cuts on one side of the spear head, extending from the point of the barb back towards the butt. These average 1 mm wide and 5.6 mm in length. Comparative examples have cuts in a similar position, but the patterns vary (cf. Figures 4-7). These cuts are not the same as those used for thickness reduction. They serve no obvious function, but perhaps parallel the practice of identification marks and good luck tokens better known from the Western Desert (Douglas 1977: 20).

This spear shaft (A23064) appears to have been carefully finished by scraping most of the surface with either stone or glass scrapers. Many of the branches along the shaft have been broken off, while others have been cut with a sharp tool. The shape of the notches on the spear head indicates the use of a metal implement. In addition, some thinning of the shaft has been undertaken by slicing long thin slivers of wood rather than by shaving and scraping, the actions performed by stone tools. Although metal tools could have arrived in this part of the State 130 years ago, or even earlier if Dutch East India Company shipwrecks provided



Figure 6 A343 — a similar spear from the same area now in the WAM collection.
Length = 3.5 m.

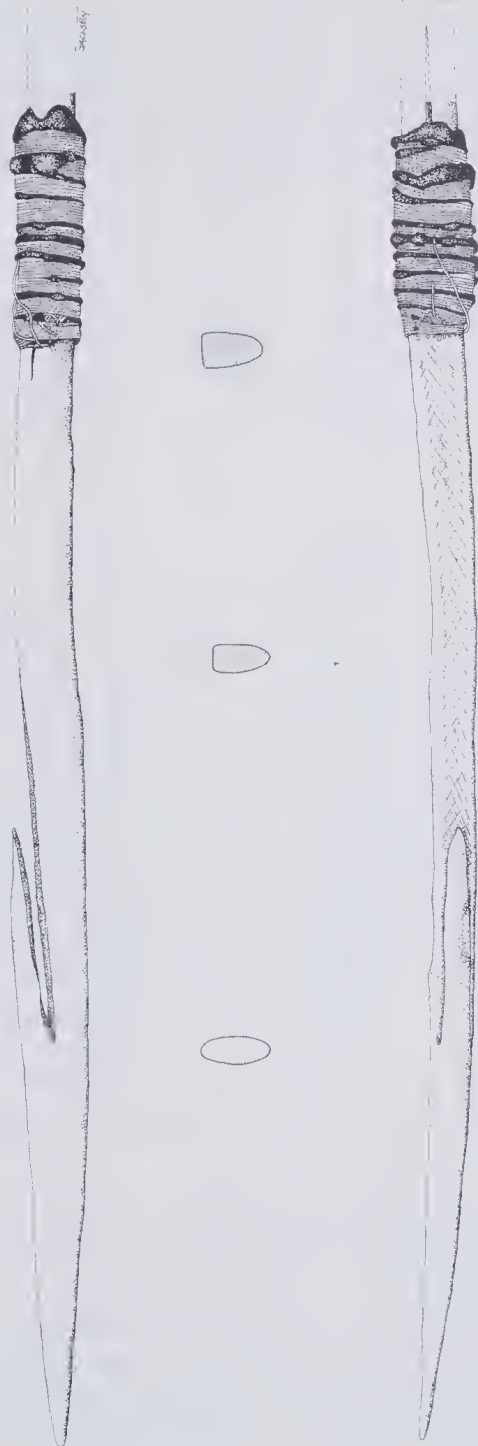


Figure 7 A23455 — a similar spear head from the WAM collection. Length = 34.3 cm.

artefact metal, we consider that the use of metal tools on this spear suggests it was made between 60 and 100 years ago.

A barb (WAM A23456) broken from a spear (similar to A23064) is illustrated in Figure 8. This barb, found adjacent to an adze flake with gum adhering (Bindon: in prep.) on the floor of a rock shelter, about 3 km from the walled shelter, along with the discovery of point A23494 confirms the use of barbed spears until relatively recently in this area.

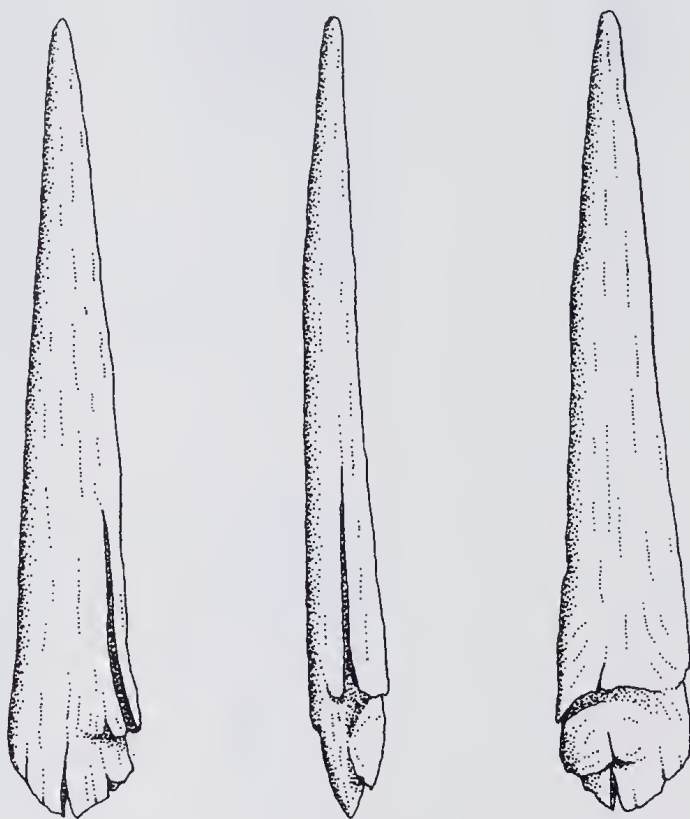


Figure 8 A23456 — the barb discovered in an adjacent rock shelter.
Length = 48 mm.

Taking this and all the environmental factors into account, we consider that even in this arid climate and partially protected location, the preservation of wood for more than a century is unlikely.

Comparison with other spears in the literature (Clement and Schmelz 1903; Davidson, 1934, 1936; Gould 1970) and in the collection of the Western Australian Museum suggest that while well known, this type of spear is not the most common form collected from the Pilbara Region. Comparative measurements on a similar spear in the WAM collection (A343 — reference location 'North-West',

c. 1902, Figure 6) show that the walled-in spear is shorter and lighter than others of its type, and is more carefully finished.

The functional nature of the recently discovered spear as determined by the criteria discussed by Palter (1977) is of interest. The length of the spear lies close to the mean of his hand-thrown sample (2.73 m vs. 2.66 m). However, the mass of this spear (c. 300 g) lies much closer to the mean mass of spear thrower projectiles (246.3 g) than to hand-thrown spears (740.0 g). Similarly, the point of balance (0.44) is in the region of overlap between hand-held and spear thrower projectiles. The lack of a functional indentation on the butt of the spear argues for its being a hand-thrown projectile, but it appears to be at the morphological extreme of the range of such weapons. In his study of Pilbara rock art, Wright reports spears similar to that which were described (1968: 43, 62 and Figures 1, 44, 764). None of these are being thrown or thrust by hand although future discoveries may reveal such an example.

Discussion

Ethnographic accounts of Aboriginal life in the Pilbara contain no references to walled rock shelters. In part, this reflects a lack of field observation; few early writers ventured far from the immediate environs of the white settlements. Perhaps also at the turn of the century when these writers were active, some of the traditional exploitative activities of the Aborigines were being abandoned. C. and A. Clarke (in prep.) have obtained a number of contemporary Aboriginal accounts concerning the utilization of rock shelters, including walling, as described to them by descendants of the original inhabitants of the region.

We conclude that fissures and niches were walled to encourage habitation by small game and perhaps to aid in making their capture more certain. In our interpretation the walls can be regarded both as a hunting device and as a strategy to increase the resource potential of the area.

Most of the small shelters and openings were too small for human habitation, but were easily modified with small walls to provide a large number of safe habitats for various animal species. Mammals like rats (*Rattus* sp.) and possums (*Trichosurus* sp.) as well as reptiles like pythons (*Aspledites* sp.) and goannas (*Varanus* sp.) are the most likely occupants of such environments based upon considerations of both size of apertures left in the walls and the known species for the area. The provision of passages either by the insertion into the wall of a suitable length of hollow tree-trunk, or by simply omitting to wall a niche completely suggests that access was deliberately provided. If entry to these places was being denied, then the walls would have been complete. The walls, with restricted entry passages provided an expanded safe habitat into which the invading species population was allowed to grow quickly to the carrying capacity that the niche afforded (Odum 1969: 182 ff). As a hunting strategy, the practise we

describe is similar to that of placing hollow logs in streams to exploit later whatever occupant takes residency (Roth 1901). After providing an environment, the hunter leaves the area for some time allowing the animal to move in. Sometime later, the wall is broken down and any resident animals taken for food before the wall is rebuilt, providing opportunities for the remaining population to again expand into the area.

There are seven stone arrangements and numerous large surface campsites in close proximity to the low ridge which holds most of the walling discovered in this area. The concentration of stone arrangements suggests that at some stage in the prehistory of this area, large numbers of people gathered to participate in ceremonies. Such increase in density of the human population would place considerable pressure on food resources, and we suggest that this may account for the large number of walls scattered through the area. The walled shelters both increased the number of animals available and made their location more certain. There is no suggestion that the type of resource management described here would have the same importance that Bunya nuts had in the Queensland forests (Petrie 1904: 11), or Bogong moths in the Australian alps (Flood 1980). The scale of involvement is clearly at a lower level, and may suggest a correspondingly small population involved in any activities in this area.

Some of the walls found following the initial discovery had more than half their length broken down, especially the more obvious large walls. This destruction allowed sufficient space to afford human access into the chamber behind. Whether this was done by Europeans or by Aborigines is not known; however, it seems most likely that they were pulled down by inquisitive investigators.

At this stage we are unable to account for the regional localization of the hunting technique which we have proposed.

The discovery of the typical Pilbara spear behind one of these walls in a rock shelter, indicates that the walls were constructed by Aboriginal people. The spear was placed so that the removal of only two or three of the wall slabs revealed its position; whoever built the wall was certainly aware of the presence of the spear. Aboriginal artefacts have always been considered as interesting souvenirs by white settlers and this specimen would have been removed by a European if it had been seen. We suggest that the spear was cached behind the wall by the Aboriginal builder of that structure. There seems to be no further connection between these two examples of Aboriginal technology. This spear is an excellent example of one of the Pilbara spear types and is well provenanced, providing an excellent type specimen.

Aboriginal man used numerous contrivances and techniques in his hunt for game. Nets, brush fences, pit-traps, and various ambush techniques were used throughout Australia. If our assessment is correct, the technique proposed in this paper expands the range of hunting methods and underlines yet again the diverse resourcefulness of Aboriginal exploitation of the environment.

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